Turquoise International Journal of Educational Research and Social Studies

ANALYSIS OF THE PHYSICAL ACTIVITY OF 7th GRADE STUDENTS (BOYS)

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Submitted: 17.06.2020	Accepted: 27.06.2020	Corresponding Author: viordanov@uni-ruse.bg

ABSTRACT

In connection to studying the physical activity and psycho-physical achievements of the students from 7th grade, tests for physical capacity of boys were conducted at "Hristo Botev" Secondary School, Ruse. The tests are mandatory for all 7th grade boys. 102 students participated in two groups - "A" and "C" classes -experimental ones and "B" and "D" classes–control ones. These tests improve the motion activity, physical qualities, knowledge and skills of students.

Keywords: sports, physical fitness, students, analysis

INTRODUCTION

Physical education and sports at school are an integral part of the overall educational system which ensures the intellectual and physical development of the young generation. The problems related to the strengthening of health, normal psycho-physical development and development of the level of motion qualities of students in all stages of our educational system are solved to a large extent only in the training process of physical education and sports (Stoychev, Ch., 2016).

State educational requirements for "Physical Education and Sports" in Bulgaria determine the main objectives of the subject as a specific educational process. These goals are tailored to the age, mental and physical development of students[2]at different educational levels and stages (Dimitrova, B., et al., 2002).

The possibilities for variability of the content and the variety of the forms allow the whole activity to be directed towards the values of the student, his interests and needs. This way the process of liberalization of "Physical Education and Sports" at school find its continuation inthe foundations of the state educational requirements for the curriculum in "Physical Education and Sports" (SER for curriculum, 13.06.2000).

PURPOSE of the research - to study the achievements of all boys - 7th grade students- to check out if there is a great dispersion in these results. According to the requirements of the Ministry of Education and Science to improve the physical capacity of adolescents, a current assessment of students will be formed based on the tests.

METHODOLOGY

All the necessary information has been gathered using the following research methods: pedagogical observation, discussion and physical tests on 7th grade boys from "Hristo Botev", High School, Ruse.

The current study is focused on physical education and sports in school primary education.

The topic is put on studying the possibility of using the physical ability of 7th grade pupils as a base model for intense learning.

The object of presentation are the quantitative and qualitative characteristics and indicators, as a result of the proposed sports and pedagogical impact on 7th grade students.

System-structural and system-functional approaches were the leading ones used in our work when searching for the complex solution of the tasks assigned. For the specific purposes in the theoretical analysis a critical-analytical approach was applied, whereas for the creation of the intensive training model were used heuristic and cybernetic approaches.

For the needs of correlation analysis we have created, based on the dependability levels, correlation models in order to present visually the dynamics of its internal structure of the studied phenomena and people, coming as a result by the sports-pedagogical impact of the intensive training model.

THE TASKS for achieving the goal are:

1. Research of the available literature and normative documents on the problems of the sports-pedagogical process and the modular training in physical education and sports at school;

2. Variation and comparative analysis of the physical achievements of the boys from 7th grade;

3. Summarizing conclusions about the workat school.

We gathered the necessary information with the help of the following research methods: pedagogical observation, discussion and physical tests with the 7th grade boys from "Hristo Botev" Secondary School, Ruse.

FINDINGS AND DISCUSSION

The training in "Physical Education and Sports" raises new problems to the specialists in the field of physical education at school. Along with keeping up its undeniably high quality, it is important for us to check out and optimize all the factors on which its effectiveness depends.

Alongside with the means that have proven its effectiveness, it becomes more and more necessary to seek and apply innovative mechanisms when organizing and conducting the training process of "Physical Education" in primary school, in order to stimulate and maintain physical activity of students at a sufficiently high level. This is what led us to the current statistical survey (Simeonova, T., 2010).

In the lesson on "Physical Education and Sports" the primary form of activity is motion-emotional. It stems from the nature of the physical exercises, the guidance and implementation of the learning process and the impacts produced. Efforts in this direction are crucial for the quality of the learning process at primary school, which depends on both the complex impact and the specific pedagogical guidance. The activity of high school students and their conscious attitude to work in the lesson "Physical Education and Sports" depends very much on their motives, which raise, develop and change under the influence of various interacting factors, including and the tailored impact of the sports teacher (Yordanov, V., T. Todorov, 2014).

In this empirical part successively are presented:

- the main empirical result of the research - basic model for statistical research in school environment;

- the other empirical results from the application of the toolkit, described in the second part of the dissertation (Yordanov, V., 2018, Model for intensification of dance training for students of primary education, Shumen);

- pedagogical analysis, following the presentation of all results.

Data analysis is differentiated into two main groups –an experimental one and a control one. We have developed and applied on them a new program. In order to compare the significance of the found differences - d, we also used Student's test – tand the corresponding guarantee probability Pt. The analysis of the indicators characterizing the dynamics of development of the mental and physical qualities was performed on the basis of the quantitative characteristics of the individual indicators shown on the tables below. The dynamics of development of mental and physical qualities for the experimental and control groups were analyzed mainly using statistical parameters. The collected data on the psycho-physical abilities of the students / boys from 7th grade are subject to variation and correlation analysis.

Table 1 presents information about the specific units of measurement used in the psycho-physical tests for the diagnosis of 7th grade boys.

Table 1. Measuring units.

№	Indicators	Measuring Units
1.	Long jump from a point	Centimeters
2.	Hand Power dynamometer	Kilograms
3.	Sit-ups	Seconds, number
4.	Holding in height with bent elbows	Seconds
5.	Shuttle running 10x5	Seconds
6.	Balance number of steps	Seconds
7.	Knocking frequency 25 cycles	Seconds
8.	Mobility of hip joints	Centimeters
9.	Tapping test	Points
10.	Perron test	Points

Tables 2 and 3 present the results of the study with 7th grade students / boys - experimental and control groups.

Table 2. Indicators characterizing the general physical training of 7th grade boys (experimental group) and significance of the growth.

№	Indicators	n	Av1	Av2	Diffe-rence	Diffe-rence %	S1	S2	V1	V2	t	Pt
1	Long jump from a point - cm	38	175,8	182,1	6,3	3,6	18,6	18,6	10%	10%	-3,50	99,9
2	Hand Power dynamometer	38	79,5	89,2	9,8	12,3	16,1	17,6	20%	20%	-6,87	100,0
3	Sit-ups -number for 30 sec.	38	21,7	21,8	0,2	0,7	3,3	2,7	20%	10%	-0,59	44,4
4	Holding in height with bent elbows – sec.	38	5,6	8,5	2,9	51,8	9,1	9,9	160%	120%	-2,65	98,8
5	Shuttle running 10x5 sec.	38	23,6	23,1	-0,5	-2,0	2,2	1,9	10%	10%	1,17	75,2
6	Balance number of steps – chron. stop	38	3,7	2,8	-1,0	-26,1	3,6	2,5	10%	90%	1,74	91,0
7	Knocking frequency 25 cycles- sec.	38	11,3	11,1	-0,2	-1,8	1,3	1,4	10%	10%	1,12	72,9
8	Mobility of hip joints- cm	38	6,6	4,6	-2,0	-30,8	7,7	6,0	120%	130%	2,97	99,5
9	Tapping test	38	271,8	276,8	4,9	1,8	45,1	28,3	20%	10%	-0,84	59,2
10	Perron test	38	3,8	2,8	-1,0	-25,7	1,2	1,0	30%	30%	5,57	100,0

Table 3. Indicators characterizing the general physical training of 7th grade boys (control group) and significance of the growth.

№	Indicators	n	Av1	Av2	Diffe-rence	Diffe-rence %	S1	S2	V1	V2	t	Pt
1	Long jump from a point -cm	33	175,8	183,0	7,2	4,1	24,4	22,7	10%	10%	-3,54	99,9
2	Hand Power dynamometer	33	74,9	81,1	6,2	8,3	22,0	22,0	30%	30%	-2,29	97,1
3	Sit-ups -number for 30 sec.	33	21,1	21,1	0,1	0,3	2,7	2,6	10%	10%	-0,14	10,8
4	Holding in height with bent elbows – sec.	33	8,5	16,0	7,5	88,6	11,4	18,3	130%	110%	-3,19	99,7
5	Shuttle running 10x5 sec.	33	23,3	23,2	-0,1	-0,4	2,6	2,0	10%	10%	0,25	19,3
6	Balance number of steps – chron. stop	33	2,3	1,5	-0,8	-36,8	2,9	1,9	120%	130%	2,25	96,9
7	Knocking frequency 25 cycles- sec.	33	11,6	10,9	-0,8	-6,6	1,0	1,3	10%	10%	5,00	100,0
8	Mobility of hip joints- cm	33	6,9	7,3	0,4	5,7	6,3	7,0	90%	100%	-0,61	45,5
9	Tapping test	33	245,6	269,9	24,3	9,9	27,9	29,3	10%	10%	-9,94	100,0
10	Perron test	33	3,9	3,0	-0,9	-24,0	1,2	1,1	30%	40%	4,24	100,0

The applied sports-pedagogical methodology plays a significant role on the motion qualities. Apparently, the Perron test exposed significant results in both boys groups studied. 1, 2, 4, 6, 7, 9 and 10 are the tests in the control group, for which there is a significant increase at the end of the study period. In the control group, the number of significant results for which there is an increase, determined by the empirical value of the Student's coefficient, exceeds the tabulated one according to the degrees of freedom for the study and in addition to the guarantee probability (Pt) exceeds the threshold of 95%. The growth in the experimental group is 6 cm, and for the control one - 8 cm. In both groups the growth is significant, according to the statistical requirements, because in both groups the guarantee probability exceeds the limit value (Pt) 95%. This circumstance provisions us with the conclusion that the null hypothesis was rejected and the alternative for the presence of a significant increase in the two studied samples must be accepted. The growth in the experimental group in the range of 10 kg and in the control group- of 6 kg, is statistically significant due to the high guarantee probability, reaching a maximum value of (Pt) 100% in the experimental group, and in the control one (Pt) 97.1%, thus exceeding the limit (Pt) 95%, determined according to the degrees of freedom 38, 33 of the studied sample.

The increase in the experimental and control group for the "sit-ups" test is minimal and does not reach statistically significant values when comparing the beginning and the end of the study time period.

In the test "holding the height with bent elbows" in the experimental group achieved 3 sec. growth, while in the control group is 8 sec. Significant values are present due to the high guarantee probability, which is 98.8% for the experimental group (Pt) and 99.7% for the control one (Pt).

The increase in the experimental and control group for the "shuttle run" test is minimal and does not reach statisticallysignificant values from the beginning and end of the time period with lower than (Pt) 95% guarantee probability, shown in the tables above.

In the balance test, the control group achieved significant values at the end of the study period, while in the experimental group the increase was present but did not reach significant values, which is reported in Table 1, as lower than (Pt) 95% guarantee probability of measurement (Pt) 91%.

In the "tapping frequency" test, the control group achieved significant values at the end of the study period at the maximum guarantee probability (Pt) of 100%, while in the experimental group the increase was present but did not reach significant values, which is lower than (Pt) 95% and the guaranteed probability of measurement (Pt) is 72.9%.

The increase in the test "mobility in the hip joints" is 2 cm in the experimental group, while in the control group it is 0.4 cm. For the experimental group it can be assumed that there is a significant increase with (Pt) 99.5 guarantee probability shown of Table 1. In the control group the increase is present but does not reach a significant value (Table 2).

The results of the tapping test for the control group show with a maximum guarantee probability (Pt) of 100% that there is a significant increase within 23 units, while in the experimental group the increase is minimal and only 5 units and does not reach a significant value (see Table 1, 2).

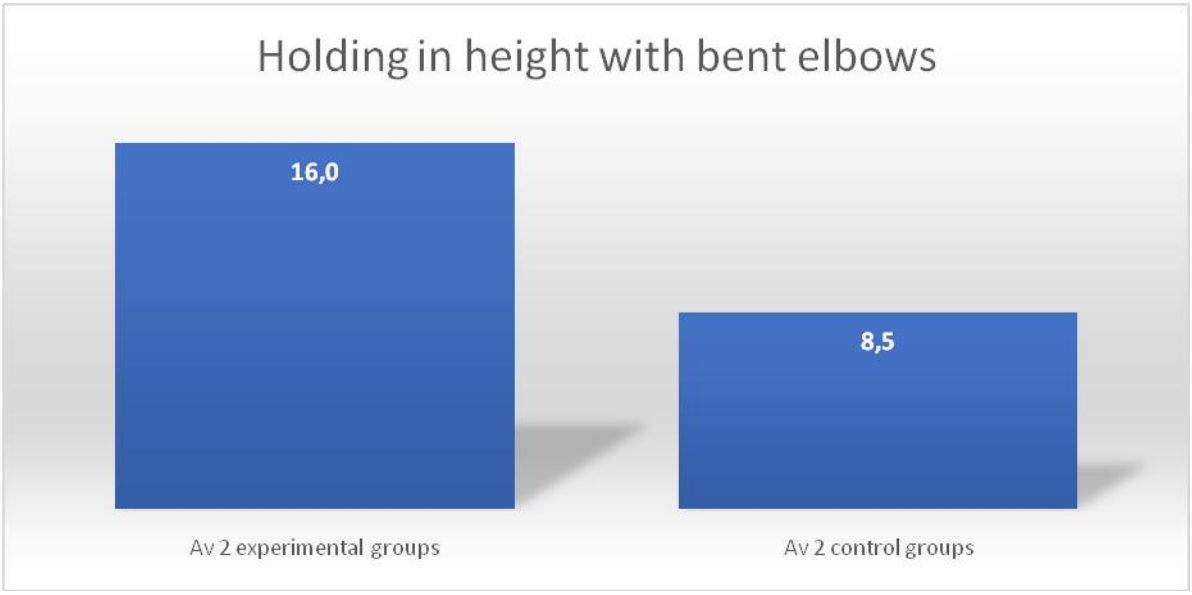
For the Perron test, it can be assumed with confidence that there are significant values from the results at the beginning and at the end of the study period for both the experimental group and the control group (see Tables 1 and 1), due to the maximum (Pt) 100% guarantee probability.

Tests 1, 2, 9 and 10 achieved significant results at the end of the period, certified by the achieved guarantee probability exceeding 95%. We assume that the positive differences obtained come as a result of a systematic and diligent attitude in the classes of "Physical Education and Sports" of the older students from 7th grade, which improves and stronger affects the tests and results. When regarding the development of physical qualities the acceleration of the fast growing bodies greatly influences. The process consists of uneven development of the strength and length of the limbs in the different participants, and this obviously has its impact on the results measured by the tests. There is also some process of immobilization due to the presence of generally usedelectronic devices, being very popular among adolescent participants studied.

Table 4. Significance of the differences between the studied physical indicators of boys from 7th grade (experimental and control groups) after the end of the experiment.

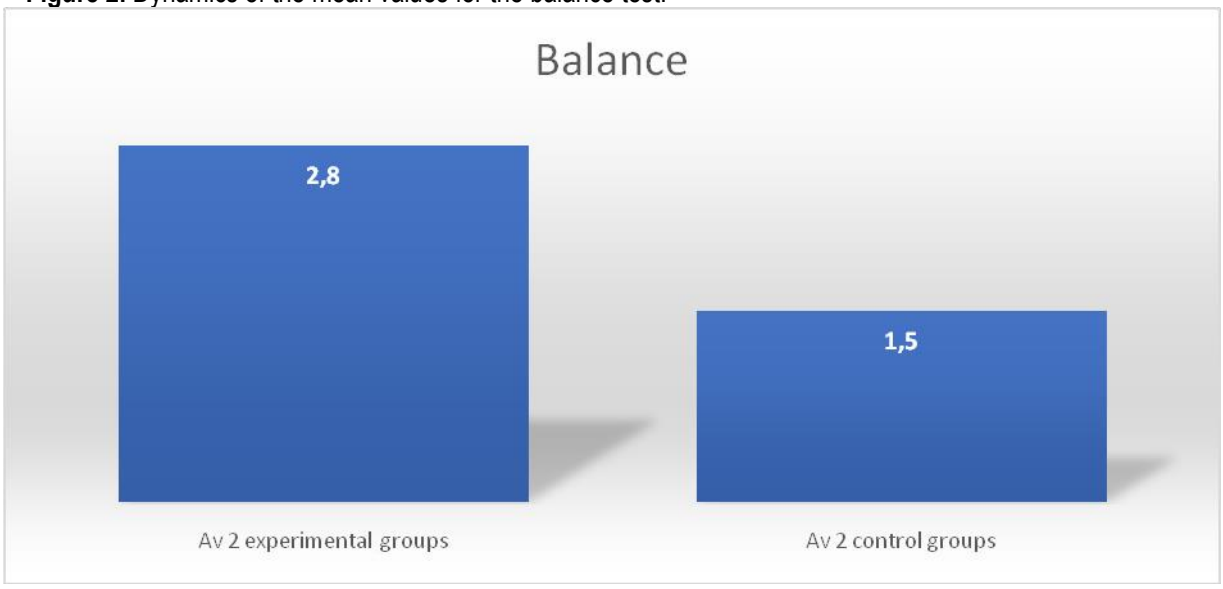
№	Indicators	Av2 Experim.	Sav2	Av2 Control	Sav2	d	t	Pt
1	Long jump from a point -cm	182,1	18,6	183,0	22,7	0,51	-,19	50,6
2	Hand Power dynamometer	89,2	17,6	81,1	22,0	-10,05	1,73	86,4
3	Sit-ups -number for 30 sec.	21,8	2,7	21,1	2,6	-3,29	1,11	28,5
4	Holding in height with bent elbows – sec.	8,5	9,9	16,0	18,3	46,71	-2,19	99,5
5	Shuttle running 10x5 sec.	23,1	1,9	23,2	2,0	0,48	-,25	30,7
6	Balance number of steps – chron. stop	2,8	2,5	1,5	1,9	-89,97	2,47	98,6
7	Knocking frequency 25 cycles- sec.	11,1	1,4	10,9	1,3	-1,88	,63	44,6
8	Mobility of hip joints- cm	4,6	6,0	7,3	7,0	37,92	-1,81	79,4
9	Tapping test	276,8	28,3	269,9	29,3	-2,54	1,00	3,7
10	Perron test	2,8	1,0	3,0	1,1	5,18	-,61	23,7

Figure 1. Dynamics of the mean values for the holding in height with bent elbows test.



With a high guarantee probability (Pt) of 99.5%, it was found that in the test "holding in height with bent elbows" there is a significant difference of 8 sec. in the comparison results ofthe experimental and control groups in favor of the experimental (see Table 4).

Figure 2. Dynamics of the mean values for the balance test.



High results were achieved when comparing the results of the "balance test" between the experimental and control groups, certified by the high guarantee probability (see Table 4).

The correlation dependencies between the "Length Jump" test and the physical parameters of the experimental and control groups for 7th grade boys are given in the following figure:

Figure 3. Correlation dependencies.

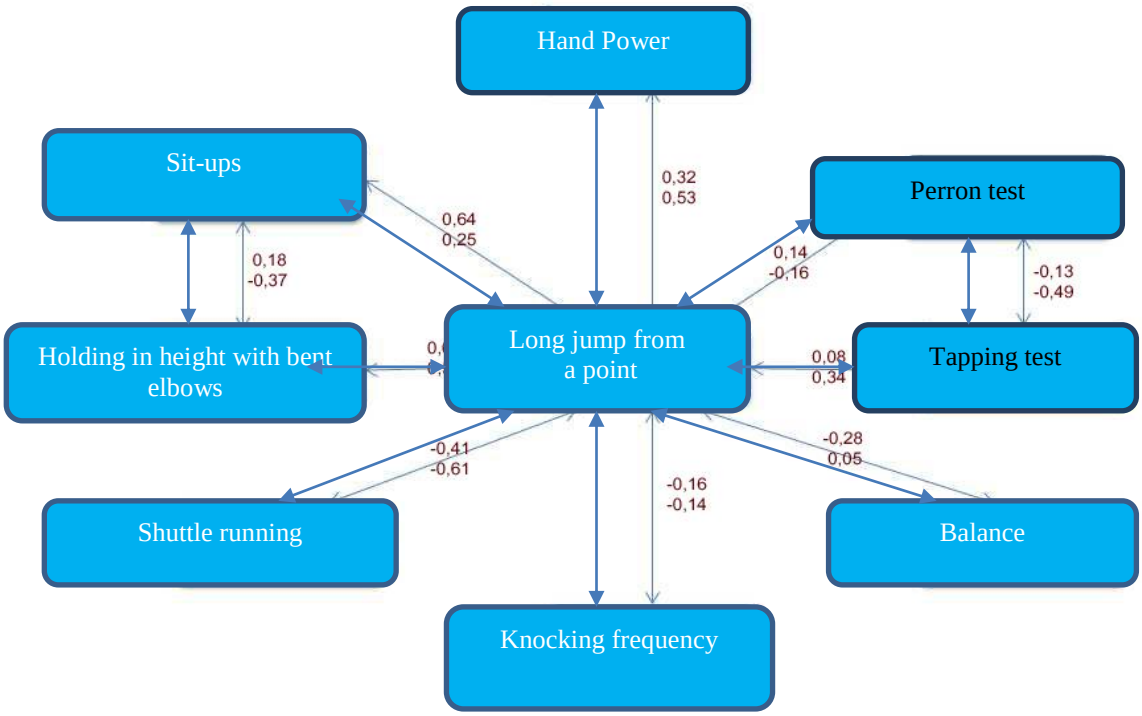


Table 5. Correlation table 7th grade boys experimental group.

	1	2	3	4	5	6	7	8	9	10
2	,323*									
3	,232	,032								
4	,636**	,164	,178							
5	-,408*	-,278	-,031	-,554**						
6	-,276	,079	-,185	-,199	,043					
7	-,158	-,021	-,258	-,137	-,071	,350*				
8	-,005	-,092	,013	,064	,160	,009	-,154			
9	,085	-,028	,222	-,053	-,024	,013	-,284	-,123		
10	,137	,056	-,374*	-,098	-,279	,070	,169	-,065	-,133	

1	2	3	4	5	6	7	8	9	10
Long jump from a point -cm	Hand Power dynamometer	Sit-ups - number for 30sec.	Holding in height with bent elbows – sec.	Shuttle running 10x5 sec.	Balance number of steps – chron. stop	Knocking frequency 25 cycles- sec.	Mobility of hip joints- cm	Tapping test	Perron test

The correlation structure in the experimental group of 7th grade boys table 5, figure 3 also contains significant dependencies between test 1 and test 2 (0.323), test 1 and test 4 (0.636), test 1 and test 5 (-0.408). There is also a significant relationship between tests 4 and 5 (-0.554). In this sample, there was a significant dependency between test 3 sit-ups and the "Perron test". The interdependencies between the motion tests also correlate with the speed test, very logically with the shuttle running as well and confirm the beneficial effect of the applied sports-pedagogical methodology on the experimental group of 7th grade boys.

Table 6. Correlation table boys 7th grade control group.

	1	2	3	4	5	6	7	8	9	10
2	,528**	2								
3	,255	,028	3							
4	,571**	,408*	,375*	4						
5	-,612**	-,332	-,451**	-,543**	5					
6	-,196	,241	-,155	-,091	,369*	6				
7	-,136	-,160	,022	-,379*	-,124	,016	7			
8	,165	,175	-,144	,229	,039	,014	-,122	8		
9	,279	,412*	,102	,492**	-,111	-,122	-,542**	,174	9	
10	-,156	-,068	-,193	-,235	,078	,272	,449**	-,216	-,498**	10

1	2	3	4	5	6	7	8	9	10
Long jump from a point -cm	Hand Power dynamometer	Sit-ups - number for 30sec.	Holding in height with bent elbows – sec.	Shuttle running 10x5 sec.	Balance number of steps – chron. stop	Knocking frequency 25 cycles- sec.	Mobility of hip joints- cm	Tapping test	Perron test

The control group Table 6, Figure 3 also has a set of significant correlations, but less significant compared to thenumber of relationships available in the experimental group. The relationships between test 1, test 2 (0.528), between test 1, test 4 (0.571), between test 1, test 5 (-0.612) are completely logical. Between tests 4 and test 7 (-0,379) and 4 and 5 (-0,492) are presented negative correlations corresponding to the test profile, namely that the speed estimated by reducing the test realization time is inversely proportional to motion activity test - holding in height. Between 7 and 9 (-0.542) and between 7 and 10 (0.449) there is both a negative value of the correlation coefficient and a positive value.

CONCLUSION AND SUGGESTIONS

The pedagogical guidance and testing was conducted in the classes of "Physical Education and Sports". The boys from the 7th grade of "Hristo Botev" Secondary School, Ruse, were tested. The analysis of the indicators characterizing the dynamics of development of the physical qualities was performed on the basis of the quantitative characteristics of the individual indicators.

The main goal of the teacher is along with the development of the motion qualities of the student, to increase as well their physical and mental stability, to form long- lasting interests and habits to practice sports. Therefore, the effectiveness of the "Physical Education and Sports" system at schoolmainly depends on the constant increase of competencies of both physical education teachers and the entire management structure. This requires constant updating of the positions of state and public bodies and organizations regarding the formation of values and orientations among children and young people having a conscious positive attitude towards strengthening their own health and physical improvement.

When talking about 7th grade students is kept the tendency of preservingthe significant correlations when the *boys* age increases.Age does not affect much the number of significant correlations. The number of indicators used in the experimental group of 7th grade boys, showing a significant increase, exceeds those used for the control group. This fact enables us to assume that the applied impact in the learning process in the experimental group levels upthe mental and physical capabilities.

It is obvious that the curriculum in "Physical Education and Sports" has a positive effect on the development of psycho-physical qualities in the students / boysstudied.

The concluding part of this publication aims to highlight the importance of the researched problem, being proved by its results.

The research and science analysis published in the specialized literature contributed to the identification of conceptual supports of the empirical research, as well as to the argumentation of the practical-theoretical relevance and perspective of the research problem indicated in the topic of this report.

The empirical research toolkit proved to be very fruitful for its realization so as to collect a significant in volume and content empirical array of data on the topic.

The goal of the research was achieved, as evidenced by the research product-model of parameters using real data on the physical achievements of students at school.

The goal was achieved gradually by solving the formulated research tasks.

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